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EXAMINER	
WANG, JIN CHENG	
ART UNIT	**PAPER NUMBER**
2628	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	**Application No.** 09/680,603	**Applicant(s)** YABLONSKI ET AL.	
	Examiner Jin-Cheng Wang	**Art Unit** 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 22 January 2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 47,48,50-56 and 58-72 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 47-48, 50-56 and 58-72 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's submission filed on 1/22/2007 has been entered. Claims 1-46, 49, and 57 have been canceled. Claims 47-48, 50-56 and 58-72 are pending in the application.

Response to Arguments

Applicant's arguments filed 1/22/2007 have been fully considered but are moot in view of the new ground(s) of rejection of the claim 47.

As set forth below, the claim 47 is rejected under §103 as being unpatentable over Strasnick et al. U.S. Pat. No. 5,861,885 (hereafter Strasnick) in view of DeKimpe et al. U.S. Patent No. 6,665,682 (hereinafter DeKimpe) and Lokken U.S. Patent No. 6,167,396 (hereinafter Lokken).

Applicant argues that Strasnick does not disclose, teach or suggest independent claim 47 limitations or the limitations of similar claims, the Examiner respectfully disagrees with applicant's arguments for the reasons discussed below.

In a non-limiting example, Strasnick thus clearly teaches in Fig. 7 and 14 and column 22 a top layer hierarchy (e.g., the product cells such as ALL for all products as the hierarchy is controlled by the display control) associated with a first axis dimension (x-axis) and a top layer hierarchy (ALL for a total of the first quarter, second quarter, third quarter and fourth quarter of Sales data and the hierarchy is controlled by the display control; see column 22, lines 10-67; see also column 16, lines 45-67 for the displayed objects along the y-axis dimension wherein the displayed objects in the y-axis dimension are in the hierarchical structure) associated with a

second axis dimension (y-axis). Strasnick clearly discloses in Fig. 14 a three-dimensional hierarchy of data structures in which the data objects are navigated and visualized in the three-dimensional layout. Moreover, Strasnick discloses in column 21, lines 30-40 a hierarchical tree structure of nodes in a 3D layout of the nodes/cells or data attributes in a hierarchy wherein the nodes/cells/attributes of the hierarchical tree are distributed/mapped to the coordinates in the 3D space and thus graphical structure has a top layer hierarchy associated with the x-axis in the 3D space, a top layer hierarchy associated with the y-axis in the 3D space and a top layer hierarchy associated with the z-axis in the 3D space (See Figs. 14-18).

Strasnick thus strongly suggests the claim limitation of a top layear hierarchy associated with a third axis dimension (See Fig. 10A, 12A and 14-18).

Applicant argues that DeKimpe fails to disclose, teach or suggest independent claim 47 limitations or the limitations set forth in the similar claims. The Examiner respectfully disagrees with the applicant's arguments for the reasons discussed below.

DeKimpe teaches the claim limitation of "a top layer hierarchy associated with a third axis dimension." See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated total for a parent member**. Children may themselves be consolidated levels, which requires that they have children. A member may be a child for more than one parent, and a child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a specific analytical technique** whereby **the user navigate among levels of data ranging from**

the most summarized to the most detailed. The drilling paths may be defined by the hierarchies within dimensions or other relationships that may be dynamic within or between dimensions. For example, when viewing data for Sales 324 for the year 1997 304 in Fig. 3, **a drill-down operation** in the Time dimension 302 would then display members Q1 366, Q2 308, Q3 310 and Q4 312.

Thus, DeKimpe discloses that in Fig. 3, there is a cube in three-dimensional space with each dimension represented by an axis of the cube and the intersection of the dimension members are represented by cells in the multi-dimensional database.

DeKimpe thus discloses a computer graphical user interface system (Fig. 3) comprising:

A database (DeKimpe Fig. 2 and column 6 wherein Fig. 2 discloses a multi-dimensional database) operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (Fig. 3 and column 6 and Fig. 2 discloses hierarchically organized data associated with a multi-dimensional hierarchy of data); and

A multi-dimensional graphical user interface (Fig. 3 and column 6 discloses a graphical user interface for drilling down or up the multi-levels of the data structures) coupled to the database and capable of user interaction to provide a multi-dimensional user interactive graph comprising:

A multi-dimensional axes data hierarchy (Fig. 3 and column 6) including a top layer hierarchy (e.g., the ALL product item is a parent of the children products A, B, C) associated with a first axis dimension, a top layer hierarchy (e.g., the YEAR 1997 is the parent of its children Q1, Q2, Q3 and Q4) associated with a second axis dimension, and a top layer hierarchy (e.g., Measures is the parent of its children profits, costs and sales) associated with a third axis

dimension; and a unique bottom layer hierarchy including a plurality of function values associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy (See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated total for a parent member**. Children may themselves be consolidated levels, which requires that they have children. A member may be a child for more than one parent, and a child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a specific analytical technique** whereby **the user navigate among levels of data ranging from the most summarized to the most detailed**. The drilling paths may be defined by the hierarchies within dimensions or other relationships that may be dynamic within or between dimensions); and

A multi-dimensional value hierarchy associated with each of the function values of the multi-dimensional axes data hierarchy (See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated total for a parent member**. Children may themselves be consolidated levels, which requires that they have children. A member may be a child for more than one parent, and a child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a specific analytical technique** whereby **the user navigate among**

<u>levels of data ranging from the most summarized to the most detailed</u>. The drilling paths may be defined by the hierarchies within dimensions or other relationships that may be dynamic within or between dimensions).

Applicant argues that Lokken fails to disclose, teach or suggest independent claim 47 limitations or the limitations set forth in the similar claims. The Examiner respectfully disagrees with the applicant's arguments for the reasons discussed below.

Lokken further discloses **a computer graphical user interface system comprising:**

A database operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (*Lokken column 4, lines 21-39*); and

A multi-dimensional graphical user interface coupled to the database (*Lokken column 4, lines 15-20 and column 5, lines 1-10 disclosing the database 300 or the OLAP database 214; Fig. 3-4C and 16-17*) **and capable of user interaction to provide a multi-dimensional user interactive graph** (*<u>Figs. 3-4C and 16-17 or the data cube of column 5</u>*) **comprising: a multi-dimensional axes data hierarchy including a top layer hierarchy associated with a first axis dimension** (*Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17 including the time YEAR or Quarter cells have the children cells such as the Month cells associated with the time dimension*), **a top layer hierarchy associated with a second axis dimension** (*Lokken column 4, lines 60-67 and column 5, lines 1-11; Figs. 3-4C and 16-17 wherein the PRODUCTS line and family cells have children cells such as the Product Items associated with the product dimension*), **and a top layer hierarchy associated with a third axis dimension** (Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17 wherein the Region layer has children cells such as the city, state and country cells

associated with the Region dimension); **and a unique bottom layer hierarchy including a plurality of function values** (*e.g., quantitative values in the space cube; see Lokken column 5, lines 1-11; see also Figs. 5-25*) **associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy** (*Figs. 3-4C and 16-17*); **and a multi-dimensional value hierarchy associated with each of the function values of the multi-dimensional axes data hierarchy** (*Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17*).

Applicant argues with respect to the claim 47 and similar claims that there is no motivation for combining the references. However, the motivation can be found from the cited references. It is clear from the cited references that one of the ordinary skill in the art is motivated to have combined the references because this allows the multiple dimension visual model being used to clearly present the data set to the user as organized in multiple levels along the multiple axis with each member being labeled as the database contains a plurality of data records having multiple data attributes/levels that need to be visualized at a plurality of levels to reveal the details of the hierarchical structure of the data records (**Strasnick Figs. 14-18, column 21-22, DeKimpe Figs. 2-3 and column 6 and Lokken column 4, lines 60-67 and column 5, lines 1-11; Figs. 5-27**).

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 47-48, 50-56, and 58-72 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 55-56, 58-62 and 69-70:

Claim 55 recites "Software for providing a computer graphical user interface". However, software or a computer program per se is neither computer components nor statutory process. Thus, claim 55 is non-statutory.

Since claim 55 includes a 101 judicial exception, claim 55 must be for a practical application of the judicial exception. As is, claim 55 failed to recite either a physical transformation or produces a useful and tangible result. Thus, claim 55 is also non-statutory for this reason.

Claim 56, 58-62 and 69-70 are non-statutory for the same reasons discussed above.

Claims 47-48, 50-54, 67-78, 63-66 and 71-72:

Claim 47 recites, "a computer graphical user interface system comprising", as a part of seemingly patentable apparatus. However, the claim 47 in reality seeks patent protection for a computer program as evidenced in claim 55 in the abstract. However, software or a computer program per se is neither computer components nor statutory process. Thus, claim 47 is non-statutory.

Additionally, since claim 47 includes a 101 judicial exception, claim 47 must be for a practical application of the judicial exception. As is, claim 47 failed to recite either a physical transformation or produces a useful and tangible result. Thus, claim 47 is also non-statutory for this reason.

Claims 48, 50-54, 67-68, 63-66and 71-72 are non-statutory for the same reasons discussed above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 47-48, 50-56 and 58-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strasnick et al. U.S. Pat. No. 5,861,885 (hereafter Strasnick) in view of DeKimpe et al. U.S. Patent No. 6,665,682 (hereinafter DeKimpe) and Lokken U.S. Patent No. 6,167,396 (hereinafter Lokken).

1. Re Claim 47, 55, 63:

Strasnick teaches a computer graphical user interface system (See the abstract; figure 13; column 6) comprising:

A database operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (column 7-8);

A multi-dimensional graphical user interface coupled to the database and capable of user interaction to provide a multi-dimensional user interactive graph (e.g., column 7 and 8) comprising:

A multi-dimensional axes data hierarchy (*e.g., figures 1-7; column 1, 6-7 and 16*) including a top layer hierarchy associated with a first axis dimension (*e.g., departments or departments cells; see column 7-8*), a top layer hierarchy associated with a second axis dimension (*e.g., Figs. 14-18 and column 21-22, for example, the attributes associated with ALL quarters that include the children cells/quarters*); and a unique bottom layer hierarchy (children cells) including a plurality of function values associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy; and a multi-dimensional value hierarchy associated with each of the function values of the multi-dimensional axes data hierarchy (*e.g., in a non-limiting example, cells representing the salespersons' sales and axis has been taught in figures 1-7 and column 1 and 16 wherein the parent member being a department cell in the department level being the parent of all the salespersons cells belonging to the department; column 7-8*); and *the children cells are the salespersons cells belonging to the department; see for example, column 7-8, lines 10-30* and *the children salespersons cells representing the disaggregation of the department cell to which they belong. Strasnick teaches in column 7-8 and 19-22 a user selection of a cell representing the company's total sales (<u>a company cell</u>) and all the sub-cells or children cells representing the departments' sales (<u>the department cells</u>) wherein the department cells emanate from the company cell and also all the sub-cells or children cells representing the salespersons' sales (<u>the salesperson cells</u>) wherein the salespersons' cells emanate from one of the departments' cells. Strasnick teaches warp navigation in which a*

navigator warps to the hierarchical dependents or children such as <u>*the department cells in the first level*</u> *in response to the selection by the navigator from the company cell. Strasnick teaches warp navigation in which a navigator* <u>*warps to the departments' cells in the first level in response to the selection by the navigator from the company cell*</u>*. Strasnick thus teaches, in response to the user selection of the departments' cells in the first level for display of departments' sales data with respect to the x-axis by a warp navigator from the company cell, display on the graph the departments' sales data or departments' cells in the first level. Strasnick also teaches warp navigation in which a navigator* <u>*warps to the salespersons' cells in the second level in response to the selection by the navigator from one of the departments' cells*</u>*. Strasnick discloses, in response to a user selection of the second level for display of salespersons' sales data with respect to the x-axis from a department cell by the warp navigator, display on the graph the salespersons' sales data or the salespersons' cells in the second level. Strasnick further discloses navigation and visualization in the 3D layout space wherein each dimension has the hierarchical structure of data attributes; see Fig. 7 and 14-18 and column 21-22 wherein the x-axis and y-axis dimensions are represented by the rows and columns and further the y-axis dimension has a hierarchical structure of displayed objects similar to the x-axis. The z-axis dimension is associated with the filter levels and heights that are selectable data objects/blocks*).

- Examiner Notes:
- Strasnick discloses hierarchy being displayed on a ground plane of the information with respect to the x-axis and y-axis (See column 1 and 16-17). Strasnick discloses hierarchy being displayed on a ground plane of the information landscape with

respect to the x-axis and y-axis wherein the X- axis of every display object is narrowed or expanded. The 2D plane or 3D box upon which the information objects are drawn has the X-dimension and Y-dimension or x-axis and y-axis as clearly taught by Strasnick in column 16-17.

- Strasnick discloses adjusting a width or height of a display of the information objects relative to the viewpoint of the user. Strasnick discloses the x-axis being associated with the x dimension of the sales data, the x dimension or horizontal dimension for the x axis being associated with the sales data hierarchy having the parent levels and children levels displayed in the information landscape with the x-axis and y-axis of sales data for the x dimension or the horizontal dimension (see Figure 5B, column 6-8, 16-17, 20). Therefore, Strasnick reads on the claim limitation of "a first axis being associated with a first dimension of the supply chain data, the first dimension for the first axis being associated with a first predetermined hierarchical arrangement of supply chain data for the first dimension."

It needs to be shown that trasnick discloses the claim limitation of "a top layer hierarchy associated with a third axis dimension".

In a non-limiting example, Strasnick thus clearly teaches in Fig. 7 and 14 and column 22 a top layer hierarchy (e.g., the product cells such as ALL for all products as the hierarchy is controlled by the display control) associated with a first axis dimension (x-axis) and a top layer hierarchy (ALL for a total of the first quarter, second quarter, third quarter and fourth quarter of Sales data and the hierarchy is controlled by the display control; see column 22, lines 10-67; see

also column 16, lines 45-67 for the displayed objects along the y-axis dimension wherein the displayed objects in the y-axis dimension are in the hierarchical structure) associated with a second axis dimension (y-axis). Strasnick clearly discloses in Fig. 14 a three-dimensional hierarchy of data structures in which the data objects are navigated and visualized in the three-dimensional layout. Moreover, Strasnick discloses in column 21, lines 30-40 a hierarchical tree structure of nodes in a 3D layout of the nodes/cells or data attributes in a hierarchy wherein the nodes/cells/attributes of the hierarchical tree are distributed/mapped to the coordinates in the 3D space and thus graphical structure has a top layer hierarchy associated with the x-axis in the 3D space, a top layer hierarchy associated with the y-axis in the 3D space and a top layer hierarchy associated with the z-axis in the 3D space (See Figs. 14-18).

Strasnick thus strongly suggests the claim limitation of a top layear hierarchy associated with a third axis dimension (See Fig. 10A, 12A and 14-18).

DeKimpe teaches the claim limitation of "a top layer hierarchy associated with a third axis dimension." See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated total for a parent member**. Children may themselves be consolidated levels, which requires that they have children. A member may be a child for more than one parent, and a child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a specific analytical technique** whereby **the user navigate among levels of data ranging from the most summarized to the most detailed**. The drilling paths may be defined by the

hierarchies within dimensions or other relationships that may be dynamic within or between dimensions. For example, when viewing data for Sales 324 for the year 1997 304 in Fig. 3, **a drill-down operation** in the Time dimension 302 would then display members Q1 366, Q2 308, Q3 310 and Q4 312.

DeKimpe discloses that in Fig. 3, there is a cube in three-dimensional space with each dimension represented by an axis of the cube and the intersection of the dimension members are represented by cells in the multi-dimensional database.

DeKimpe thus discloses a computer graphical user interface system (Fig. 3) comprising:

A database (DeKimpe Fig. 2 and column 6 wherein Fig. 2 discloses a multi-dimensional database) operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (Fig. 3 and column 6 and Fig. 2 discloses hierarchically organized data associated with a multi-dimensional hierarchy of data); and

A multi-dimensional graphical user interface (Fig. 3 and column 6 discloses a graphical user interface for drilling down or up the multi-levels of the data structures) coupled to the database and capable of user interaction to provide a multi-dimensional user interactive graph comprising:

A multi-dimensional axes data hierarchy (Fig. 3 and column 6) including a top layer hierarchy (e.g., the ALL product item is a parent of the children products A, B, C) associated with a first axis dimension, a top layer hierarchy (e.g., the YEAR 1997 is the parent of its children Q1, Q2, Q3 and Q4) associated with a second axis dimension, and a top layer hierarchy (e.g., Measures is the parent of its children profits, costs and sales) associated with a third axis dimension; and a unique bottom layer hierarchy including a plurality of function values

associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy (See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated total for a parent member**. Children may themselves be consolidated levels, which requires that they have children. A member may be a child for more than one parent, and a child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a specific analytical technique** whereby **the user navigate among levels of data ranging from the most summarized to the most detailed**. The drilling paths may be defined by the hierarchies within dimensions or other relationships that may be dynamic within or between dimensions); and

A multi-dimensional value hierarchy associated with each of the function values of the multi-dimensional axes data hierarchy (See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated total for a parent member**. Children may themselves be consolidated levels, which requires that they have children. A member may be a child for more than one parent, and a child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a specific analytical technique** whereby **the user navigate among levels of data ranging from the most summarized to the most detailed**. The drilling paths

may be defined by the hierarchies within dimensions or other relationships that may be dynamic within or between dimensions).

Lokken further discloses **a computer graphical user interface system comprising:**

A database operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (*Lokken column 4, lines 21-39*); and

A multi-dimensional graphical user interface coupled to the database (*Lokken column 4, lines 15-20 and column 5, lines 1-10 disclosing the database 300 or the OLAP database 214; Fig. 3-4C and 16-17*) **and capable of user interaction to provide a multi-dimensional user interactive graph** (*Figs. 3-4C and 16-17 or the data cube of column 5*) **comprising: a multi-dimensional axes data hierarchy including a top layer hierarchy associated with a first axis dimension** (*Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17 including the time YEAR or Quarter cells have the children cells such as the Month cells associated with the time dimension*), **a top layer hierarchy associated with a second axis dimension** (*Lokken column 4, lines 60-67 and column 5, lines 1-11; Figs. 3-4C and 16-17 wherein the PRODUCTS line and family cells have children cells such as the Product Items associated with the product dimension*), **and a top layer hierarchy associated with a third axis dimension** (Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17 wherein the Region layer has children cells such as the city, state and country cells associated with the Region dimension); **and a unique bottom layer hierarchy including a plurality of function values** (*e.g., quantitative values in the space cube; see Lokken column 5, lines 1-11; see also Figs. 5-25*) **associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy** (*Figs. 3-4C and 16-17*); **and a multi-dimensional value**

hierarchy associated with each of the function values of the multi-dimensional axes data hierarchy (*Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17*).

It would have been obvious to one of the ordinary skill in the art at the time of invention was made to have incorporated DeKimpe or Lokken's data visualization method because Strasnick's two dimensional hierarchy has been extended into higher-dimensional hierarchies including the three-dimensional hierarchy in the three-dimensional layout of the hierarchical structures of displayed objects (See Strasnick Figs. 14-18 and column 21-22). Moreover, Dekimpe teaches other claim limitations set forth in claim 47 as well including a database operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data and a multi-dimensional graphical user interface (drilling up and drilling down in Fig. 3) interaction to provide a multi-dimensional user interactive graph (cubes or hypercubes in column 6).

Strasnick implicitly discloses hierarchy being displayed on a ground plane of the information landscape with respect to the x-axis and y-axis wherein the X- axis of every display object is narrowed or expanded. The 2D plane or 3D box upon which the information objects are drawn has the X-dimension and Y-dimension or x-axis and y-axis as clearly taught by Strasnick in column 16-17, 21-22 as well as Figs. 14-18. In a non-limiting example, Strasnick discloses adjusting a width or height of a display of the information objects relative to the viewpoint of the user. Strasnick discloses <u>the x-axis being associated with the x dimension of the sales data</u>, the x dimension or horizontal dimension for the x axis being associated with the sales data hierarchy having the parent levels and children levels displayed in the information landscape with the x-

axis and y-axis of sales data for the x dimension or the horizontal dimension (see Strasnick Figure 5B, column 6-8, 16-17, 20). Moreover, Strasnick teaches in column 7-8 and 19-22 a user selection of a cell representing the company's total sales (a company cell) and all the sub-cells or children cells representing the departments' sales (the department cells) wherein the department cells emanate from the company cell and also all the sub-cells or children cells representing the salespersons' sales (the salesperson cells) wherein the salespersons' cells emanate from one of the departments' cells.

Strasnick teaches warp navigation in which a navigator warps to the hierarchical dependents or children such as the department cells in the first level in response to the selection by the navigator from the company cell. Strasnick teaches warp navigation in which a navigator warps to the departments' cells in the first level in response to the selection by the navigator from the company cell. Strasnick thus teaches, in response to the user selection of the departments' cells in the first level for display of departments' sales data with respect to the x-axis by a warp navigator from the company cell, display on the graph the departments' sales data or departments' cells in the first level.

Strasnick also teaches warp navigation in which a navigator warps to the salespersons' cells in the second level in response to the selection by the navigator from one of the departments' cells. Strasnick discloses, in response to a user selection of the second level for display of salespersons' sales data with respect to the x-axis from a department cell by the warp navigator, display on the graph the salespersons' sales data or the salespersons' cells in the second level.

One of the ordinary skill in the art is motivated to have combined the references because this allows the multiple dimension visual model being used to clearly present the data set to the user as organized in multiple levels along the multiple axis with each member being labeled as the database contains a plurality of data records having multiple data attributes/levels that need to be visualized at a plurality of levels to reveal the details of the hierarchical structure of the data records (**Strasnick Figs. 14-18, column 21-22, DeKimpe Figs. 2-3 and column 6 and Lokken column 4, lines 60-67 and column 5, lines 1-11; Figs. 5-27**).

Re Claims 48, 56, 64:

Strasnick further discloses the claimed limitation of the first dimension comprising a seller dimension associated with a seller hierarchy (column 6-8); each of the plurality of members in the first level of the seller hierarchy representing all sellers within a corresponding geographic region (column 7); and each of the plurality of members in the second level of the seller hierarchy representing all sellers within a corresponding sub-region of a region represented by a member in the first level (column 8). Therefore, Strasnick discloses the claim limitation of "a plurality of levels of hierarchies associated with the top layer hierarchy, and the bottom layer hierarchy associated with each of the plurality of levels of hierarchies."

Strasnick further discloses the claimed limitation of the first dimension comprising a product dimension associated with a product hierarchy; each of the plurality of members in the first level of the product hierarchy representing all products associated with a corresponding product category; and each of the plurality of members in the second level of the product

hierarchy representing all products associated with a corresponding sub-category of a product category represented by a member in the first level (column 22).

Strasnick further discloses the claimed limitation of the first dimension comprising a time dimension associated with a time hierarchy; each of the plurality of members in the first level of the time hierarchy representing all times with a corresponding time period; and each of the plurality of members in the second level of the time hierarchy representing all times within a corresponding sub-period of a time period represented by a member in the first level (column 22).

Strasnick and DeKimpe further disclose the claimed limitation of the graph comprising three axes, each axis associated with a dimension of the supply chain, each dimension of supply chain data being associated with a predetermined hierarchical arrangement of supply chain data for the dimension (e.g., Strasnick figure 1; column 1 and 3; **DeKimpe Figs. 2-3 and column 6**).

Therefore, Strasnick discloses the claim limitation of "a top layer hierarchy associated with a third axis dimension, and the bottom layer hierarchy associated with the top layer hierarchy of the third axis dimension."

Re Claims 50-51, 58-59, 65

Strasnick further discloses the claim limitation of displaying a window indicating the particular member specified in the filter selection, and in response to selection the particular member displayed in the window, display on the first axis of the graph a graphical representation of supply chain data for the particular member in addition to the graphical representation of supply chain data for the other members in the level of the particular member (column 8 and 20).

Strasnick and DeKimpe further disclose the claim limitation of receiving a filter selection specifying a particular member within a level for which a graphical representation of supply chain data for the particular member is not to be displayed on the graph; and in response to receiving the filter selection and selection of a level for display of supply chain data with respect to the first axis, display on the graph a graphical representation of supply chain data for each member in the selected level other than the particular member specified in the filter selection (Strasnick column 8 and 20 and **DeKimpe Figs. 2-3 and column 6**).

Therefore, Strasnick and DeKimpe disclose the claim limitation of "filtering at least a portion of the plurality of levels of hierarchies and in response the filtered levels of hierarchies disappear from the multi-dimensional user interactive graph and the multi-dimensional graphical user interface displays the filtered levels of hierarchies in a separate filtered window."

Strasnick and DeKimpe further disclose the claimed limitation of the GUI operable to, in response to selection of a particular member of the first level for display of supply chain data with respect to the first axis, display on the graph a graphical representation of supply chain data for the selected particular member (Strasnick column 8 and 20 and **DeKimpe Figs. 2-3 and column 6**).

Therefore, Strasnick and DeKimpe disclose the claim limitation of "the multi-dimensional graphical user interface allows for a user navigation of the multi-dimensional axes data hierarchy by drilling into the top layer hierarchies associated with each of the axis dimensions."

Re Claims 52-54, 60-62, 66:

Strasnick further discloses the claim limitation of displaying a window indicating the particular member specified in the filter selection, and in response to selection the particular member displayed in the window, display on the first axis of the graph a graphical representation of supply chain data for the particular member in addition to the graphical representation of supply chain data for the other members in the level of the particular member (Strasnick column 8 and 20 and Maguire Figs. 2-7).

Therefore, Strasnick and DeKimpe disclose the claim limitation of allowing the function value to be graphed over user selectable aggregations of user input data.

Strasnick and DeKimpe further disclose the claim limitation of receiving a filter selection specifying a particular member within a level for which a graphical representation of supply chain data for the particular member is not to be displayed on the graph; and in response to receiving the filter selection and selection of a level for display of supply chain data with respect to the first axis, display on the graph a graphical representation of supply chain data for each member in the selected level other than the particular member specified in the filter selection (Strasnick column 8 and 20 and **DeKimpe Figs. 2-3 and column 6**).

Therefore, Strasnick and DeKimpe disclose the claim limitation of "filtering at least a portion of the multi-dimensional value hierarchies and in response the filtered value hierarchies disappear from the multi-dimensional user interactive graph and the multi-dimensional graphical user interface displays the filtered value hierarchies in a separate filtered legend window."

Strasnick and DeKimpe further disclose the claimed limitation of the GUI operable to, in response to selection of a particular member of the first level for display of supply chain data with respect to the first axis, display on the graph a graphical representation of supply chain data

for the selected particular member and the mathematical combinations can also be displayed (Strasnick column 8 and 20; **DeKimpe Figs. 2-3 and column 6**).

Therefore, Strasnick and DeKimpe disclose the claim limitation of "providing for user interaction of complex mathematical combinations of the multi-dimensional axes data hierarchy".

Re Claims 67-72:

Strasnick and DeKimpe further disclose the claimed limitation of the GUI operable to, in response to selection of a particular member of the first level for display of supply chain data with respect to the first axis, display on the graph a graphical representation of the mathematical combinations for each of the top layer hierarchies of the multi-dimensional axes data hierarchy (Strasnick column 8 and 20; **DeKimpe Figs. 2-3 and column 6**).

Lokken further teaches in Figs. 5-27 a first wall graphical user interface grid associated with a mathematical summarization of the plurality of function values associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy and a second wall graphical user interface grid associated with the mathematical summarization of the plurality of function values associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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jcw Jinlung